logos_i_ethos_2020_(52), s. 11–32
DOI: http://dx.doi.org/10.15633/lie.3575

Mariusz Wojewoda

ORCID: 0000-0003-0732-7500

Uniwersytet Śląski w Katowicach

Narratives about Cyborgization in the Context of Technoevolution

We have often heard this debated; but it appears to us that we are ourselves creating our own successors; we are daily adding to the beauty and delicacy of their physical organisation; we are daily giving them greater power and supplying by all sorts of ingenious contrivances that self-regulating, self-acting power which will be to them what intellect has been to the human race. In the course of ages we shall find ourselves the inferior race. Inferior in power, inferior in that moral quality of self-control, we shall look up to them as the acme of all that the best and wisest man can ever dare to aim at.[1]

Mariusz Wojewoda – doktor habilitowany nauk humanistycznych w zakresie filozofii, pracownik Instytutu Filozofii na Uniwersytecie Śląskim w Katowicach, profesor UŚ. Autor monografii *Pluralizm aksjologiczny i jego implikacje we współczesnej filozofii religii*, Katowice 2010, redaktor trzech zbiorów artykułów naukowych oraz autor kilkudziesięciu artykułów publikowanych w wydawnictwach i czasopismach polskich oraz zagranicznych. Członek zarządu międzynarodowej grupy badawczej CultMedia. Jego zainteresowania badawcze koncentrują się wokół problematyki aksjologii, etyki mediów, filozofii techniki, filozofii religii, kognitywistyki.

[1] S. Butler, *Darwin among the Machines. (To the Editor of The Press)*, "The Press (Christchurch, New Zealand)" 1863, p. 183.

Introduction

The thesis that technical tools affect human life is obvious. Man-made tools allow him to develop. From the found traces of objects' use we conclude what period in the history of mankind we are dealing with (e.g. bronze, iron period, etc.). However, the nature of the impact of tools on humans is not obvious. Technical devices improve some aspects of our lives, weaken others, but certainly change them. The question about the significance of this change is related to the problem of human cyborgization. The author of the article treats cyborgization as a consequence of techno-evolution. The term "techno-evolution" is a combination of two aspects – technical and biological. Between the process of evolutionary changes and technical products there is a human being, understood as the object and subject of these changes. Technology is man-made things (gr. *techné*), as well as the process of their production. Objects do not evolve, but their creation is a consequence of the evolutionary stage in which a person able to construct them appeared. The anthropological dimension of technology are the issues of perception, imagination, narrative about technology as well as social practices related to the use of technical tools.

The author of the article is interested in the aspect of narrative on technology, in other words stories about the impact of technology and its products on the human condition. Anthropologists of culture point out that technical tools influenced the functioning of individuals and the forms of organization of social life. The productive activity belongs to the human characteristics, it is the basis for the creation of material culture.[2] Until the mid-nineteenth century, there was a dominant belief that technical tools can only be understood in the perspective of their use. It was believed that it was always possible to stop using machines, "disconnect" from them at any time, without any particular consequences

[2] A. Gehlen, *Anthropologische und sozialpsychologische Untersuchungen*, Hamburg 1986, p. 139–143; A. Gehlen, *W kręgu antropologii i psychologii społecznej: studia*, tłum. K. Krzemień-Ojak, Warszawa 2001, p. 145–149.

for man. For over a century, this perspective has slowly changed. At the moment when we care for a satisfactory level of quality of life for us, the relationship between man and machine becomes a symbiosis.[3]

The author of the article does not focus on analysing the development of technology, but on the problem of using technical tools when they become part of the human body. Currently, thanks to technology, man can change the quality of his life on an unprecedented scale – expand his cognitive and communication skills, intensify satisfaction of his needs, supplement his memory capacity, extend his existence temporarily. Technical elements connected with the body cease to be only handy tools, objects to be used; on the next stage of techno-evolution they supplement the malfunctioning of the human body, affect the perception of the world, and modify thinking about the external environment, which ultimately affects human narratives about reality and the human condition. The assessment of technological progress depends on the narrative that evaluating technology. Hence the differences occur in the assessment of specific technical solutions in the understanding of human-machine relations and the interpretation of the phenomenon of cyborgization. Knowledge and opinions on this subject are based on a mixture of various elements: scientific premises, ideas and fears related to predicting the future.

In the article, the author wants to analyse the concept of human cyborgization according to the Scottish philosopher Andy Clark. David J. Chalmers and Andy Clark gained fame thanks to analyses of the human mind and embodied cognition. The context for these analyses is the dependence of human cognitive ability on the environment in which we operate. The components and the relationship between the components of the outside world are constitutive of the complex process of human cognition.[4] The extended mind theory also allows the formulation of the expanded body problem. We have in mind human cognition in which the body and mind, understood as psychophysical unity, take

[3] M. Wojewoda, *Jakość życia jako problem filozoficzny*, "Folia Philosophica" 40 (2018), p. 97–115.
[4] A. Clark, D. Chalmers, *The extended mind*, "Analysis" 58 (1998) no. 1, p. 7–19.

part. The process of knowing depends on the senses, mind and man-made artefacts. Objects external to us create a system of dependencies that we perceive with our senses, even when it is a system of dependencies created on the basis of a virtual image of the world.[5] In the human picture of the world, what is real and virtual can complement each other. The author of the article assumes that "virtual" means as much as almost or imitating real.[6] Equipping bodies with additional technical cognitive abilities affects human cognitive and mental states. The transition from seeing, hearing and touching to thinking is a consequence of sensual presentation – visualization of the examined object. The use of technical elements affects the way things are presented, and ultimately the work of the mind itself.[7]

Social imaginarium and technoevolution

Reflecting on technoevolution involves the question of the essence of technology, in the sense in which technology directly affects man. Techno-evolution concerns three areas: 1) tools (machines), 2) human activity, and 3) biological process, thanks to which adaptation changes reveal human abilities needed to produce new tools, which, in consequence, change the creator and user of machines.

Samuel Butler was the precursor of the idea of technoevolution. In the first period of his activity he was fascinated with Darwin's theory of evolution, but later replaced the concept of natural selection with a mechanical selection formula. In the article Darwin *among the*

[5] A. Clark, *Intrinsic content, active memory and the extended mind*, "Analysis" 65 (2005) no. 1, p. 1–11, doi: 10.1093/analys/65.1.1; see R. Giere, *The problem of agency in scientific distributed cognitive systems*, "Journal of Cognition and Culture" 4 (2004) no. 3–4, p. 759–774, doi: 10.1163/1568537042484887; Z. Muszyński, *Umysł rozszerzony, poznanie rozszerzone, „nauka rozszerzona"*, "Filozofia i Nauka. Studia filozoficzne i interdyscyplinarne" 3 (2015), p. 265–280.

[6] *Virtual: Origin and meaning of virtual*, https://www.etymonline.com/word/virtual (29.11.2019).

[7] B. Latour, *Visualization and cognition: thinking with eyes and hands*, "Knowledge and Society, Studies in the Sociology of Culture Past and Present" 6 (1986), p. 9; see R. Menary, *Neural plasticity, neuronal recycling and niche construction*, "Mind & Language" 29 (2014) no. 3, p. 286–303, doi: 10.1111/mila.12051.

Machines[8] from 1863, Butler compared the development of machines to the biological evolution of living organisms. In his opinion, in the future machines will become a separate species of beings and deprive man of the dominant position. According to Butler, machines with greater moral sensitivity, when compared to man, will be created. Nowadays technoevolution is an important element in the concepts referred to as "transhumanism." Representatives of this trend include Max More, Natasha Vita-More, Andreas Sandberg, Nick Bostrom, and Joel Garreau. According to the assumptions of transhumanism, thanks to modern technologies interfering with the mind and body, we have the chance to become a post-human being. Human improvement is to be achieved through the development of knowledge in the field of genetics, robotics, computer science and nanotechnology.[9] The development of biology, especially biotechnology, neurology and neuropharmacology, influences the provision of additional opportunities for humans.[10] However, the desire to be post-human and the transition to the next level of species life seems to be a utopian tendency, raising fears of changing human nature, in the sense in which nature defines the essence of humanity.[11] The optimism of representatives of the transhumanist trend seems exaggerated, but it is worth considering the possible consequences of introducing technical elements into the area of the human mind and body.

In the opinion of the author of the article, technoevolution should be considered not as a scientific theory, but as a social imaginarium. The term was first used by the Canadian philosopher Charles Taylor when referring to the characteristics of the influence of ideas, beliefs, and stories about collective and scientific life practices. In this sense, science

[8] S. Butler, *Darwin among the Machines. (To the Editor of The Press)*…, op. cit., s. 191.

[9] M. More, *Transhumanism: Towards a Futurist Philosophy*, "Extropy" 1990 no. 6, p. 6–12.

[10] J. Garreau, *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies – and What It Means to Be Human*, New York–London et al. 2005, p. 1–15.

[11] G. Stephens, *Beyond Transhumanism*, "Futurist" 46 (2012) no. 5, p. 32–44; S. L. Sorgner, *Beyond Humanism: Reflections on Trans- and Posthumanism*, "Journal of Evolution and Technology" 21 (2010) no. 2, p. 149–172; M. N. Tennison, *Moral transhumanism: The next step*, "Journal of Medicine and Philosophy" 37 (2012) no. 4, p. 405–416, doi: 10.1093/jmp/jhs024; M. Klichowski, *Narodziny cyborgizacji: nowa eugenika, transhumanizm i zmierzch edukacji*, Poznań 2014, passim.

is understood as a certain social practice justifying collective beliefs and actions. The social imaginarium refers to the cultural background for the determination of legitimacy of significance of events and the sense of human actions, it also determines the context for the functioning of educational and political institutions financing scientific activities. Some scientific ideas are socially approved, while others are not, and therefore some will be supported and others will not be recognized by policy makers. Imaginarium is based on facts and norms, in this knowledge are woven direct or simply shared beliefs on what is human development, scientific progress which can support progress and distinguish it from what limits progress.[12]

Imaginarium refers to scientific theories, but it blends in with a specific cultural narrative. Convictions based on beliefs are not complete with the description of the facts, they set long-term goals and principles of development, and they influence social policy. This regularity concerns the justification of political life practices, such as the need to participate in forms of collective life, as well as the basic assumptions for the interpretation of the relationship between man and artefacts of technology. In this sense, useful things, like public institutions, create an environment for learning and using technical products.

Following Taylor, one can say that the imaginarium influences the definition of the social understanding of technology. Beliefs about cyborgization or the use of artificial intelligence are formulated in this area. Beliefs, which are initially shared by the few, become popular over time and become the view shared by many, create a kind of collective belief. Artefacts of new technologies have become a part of the modern picture of the world. In spite of reservations and social resistance, cyborgization will in time become something socially acceptable, it will fit into the natural human desire for a long and satisfying life. Although imaginarium is a kind of cultural background (simplification) for more expressive views and theories. However, the background itself is disordered and not fully articulated. The narratives provide the background for scientific practices, while

[12] C. Taylor, *Modern Social Imaginaries*, Durham–London 2004, p. 23–25.

practices provide confirmation for socially recognized narratives.[13] In the author's opinion, three models of such narratives can be distinguished about the impact of technology on the human body – human cyborgization. What distinguishes them is a different concept of man and a different way of understanding the relationship of what is natural and artificial:

1) **An engineering-pragmatic narrative**, focused on problems solving, which are understood as technical issues, which can be solved by applying appropriate system procedures and schematizing human behaviour. Social and ethical problems are treated as a variant of technical problems. In this approach, the term "artificial" refers to something invented by man and means mere opposition to what is biological (natural). One takes a pragmatic attitude towards things and their use, pointing to handiness and the use of tools to perform specific tasks. It is postulated to create more and more perfect, even autonomous machines managed by artificial intelligence, the use of which is to complement the limitations of the human body, in this sense the robot, regardless of how much it resembles a human being, is considered only as a tool. The machine autonomy is gradual in this case and does not mean complete independence. In this narrative, the rhetoric of threats is hardly developed, the rhetoric of opportunities dominates. The constantly increasing impact of technology on human life makes engineers aware of the need to create a set of procedural standards for machine users. People, by their ignorance or laziness, can make the machine stop working.[14] On the one hand, a reservation can be formulated about the model of engineering-pragmatic narrative, because either the creation or use of tools is not axiologically and ethically neutral. Certain technical products can pose a threat to humans, regardless of the actual intentions of their creators. On the other hand, people who sympathize with this narrative look at the products of technology from the perspective of its

[13] H. L. Dreyfus, *Being-in-the-World: A Commentary on Heidegger's Being and Time*, Cambridge, MA 1991, p. 73; J. R. Searle, *The Construction of Social Reality*, New York 1995, p. 45–49.

[14] J. Sutton, *Exograms and Interdisciplinarity: History, the Extentented Mind, and the Civilizing Process*, in: *The Extended Mind*, ed. R. Menary, Cambridge–London 2010, p. 211.

creators. In comparison with other narratives, proponents of this narrative understand the complexity of the technological process much better.

2) **Biological and evolutionary narrative**, in this perspective the development of technology is perceived as a consequence of specific events resulting from the adaptation of man to living conditions. The difference between what is natural and artificial is actually apparent, because man, as a "natural" being, uses the "artificial" mechanical to improve his own actions. In this approach, technical tools complement the natural abilities of man. Among other things, the desire to fly led to the invention of the aircraft, which is somewhat complementary to equipping human arms with additional skills and exceeds the ability of organic flight. In this perspective, the expression technoevolution takes on the proper meaning as a combination of biological evolution and technical progress. Cyborgization is perceived as a natural, next stage in the human evolution. In the biological-evolutionary narrative there is also an attempt to connect the work of the mind with the information system. It is assumed that the computer science language can be the basis for explanation of the complex structure of the functioning of the human brain.[15]

On the one hand, human fascination with machines is associated with admiration for automation, and on the other hand with the need to create cyber bodies or cyber body parts that are to resemble human bodies. In this approach, machines do not so much eliminate a human being, but they become a cultural pattern of behaviour for him. The supporters of this narrative are impressed by the automatism of conduct, which is to protect us from dilemma situations. These are difficult situations when the subject cannot make a decision or has made the wrong choice. The internal rules of life of institutions and corporations take the form of technical operating procedures. The choice compatible with the socio-mechanical algorithm seems to be free from typical human

[15] The extended mind concept of Ande Clark and David Chalmers is part of the biological concept of human cognition. A. Clark, *Supersizing the Mind: Embodiment, Action, and Cognitive Extension*, Oxford 2008, p. 20–25.

decision-making errors. Hence the need to create a machine that imitates human emotional responses, such as sensitivity to human misery, or the ability to adapt to changing living conditions. Techno-evolutionary connection of the human brain with the machine could allow machines to be equipped with a set of rules allowing for sensitivity and the ability to act based on mechanically ethical principles.[16] A general perspective dominates in the biological narrative about man. Based on biological premises, the individual's moral responsibility cannot be justified. It seems that empathy on a biological and mechanical basis will be of collective character, it will not individualize objects. Consequently, a vulnerable cyborg will be unable to make choices about the values he understands. A human person has such ability, but it is based on social premises, upbringing and education. The popularization of the phenomenon of cyborgization may reveal new problems before us regarding the upbringing and education of people-machines.

3) **Humanist-cultural narrative**, in this model it is recognized that the development of technology on one hand brings new opportunities to improve the quality of human life, and on the other creates a whole range of threats. In this trend, there is often a reference to the postulate of protecting human nature against the interference by technical artefacts. Narratives indicating fear of losing humanity are prevalent in the humanistic-cultural rhetoric. Awareness of threats leads to radicalization of the postulate of moral responsibility for the effects of human actions. It goes beyond the legal context of post-fact responsibility. Moral responsibility concerns the recognition of threats arising from the development of technical civilization and the possible warning of humanity against adverse changes in this process. The postulate of responsibility applies to individual persons, companies sponsoring the development of specific fields of science, state and international institutions responsible for making strategic decisions on financing the development of new

[16] S. Cave et al., *Motivations and Risks of Machine Ethics*, "Proceedings of the IEEE" 107 (2019) no. 3, p. 562–574, doi: 10.1109/JPROC.2018.2865996.

technologies.[17] The argument in this narrative model is based on the belief that the work of the human mind cannot be algorithmized. The human mind is a mystery, it is impossible to explain the internal structure of the mind as a traditional or quantum computer. These arguments are based on the statements of some scientists.[18] In this approach, man can, at least to some extent, make free choices.

Thinking about contemporary technology in terms of responsibility implies freedom of man's choice – machine user. Within this narrative, the question is considered, in what sense will human cyborgization affect human free will? Will a man with mechanical parts give up his right to make a free choice, justifying his preference for a comfortable life, or for security reasons? The fears arise from the awareness of events that took place in the twentieth century and were associated with scientific progress, technological development that led to the "mass destruction" of a large part of the human population. We currently have the problem of "ecological disaster" and inability to live without human energy sources and machine support. In the humanistic-cultural narrative there is a clear fear of "artificial intelligence," which is perceived as connected with "artificial will" which may desire to dominate man.[19] There is an analogy here to that of human power over animals resulting from the advantage of human intelligence over animal intelligence. In this perspective, ethical reflection is intended to be a warning against the dangers arising from the development of technology, and more specifically human cyborgization. It is also a reflection on setting boundaries regarding such interference, which will protect us against violation of the integrity of the human person and the essence of humanity. In both cases, the limits may be different. Technical interventions that help maintain

[17] H. Jonas, *Das Prinzip Verantwortung: Versuch einer Ethik für die technologische Zivilisation*, Frankfurt a.M 1979, p. 183–186.

[18] Justifications for this type of argument are also provided by the concepts of modern physicists, including Max Tegmark. See M. Tegmark, *Why the brain is probably not a quantum computer*, "Information Sciences" 128 (2000) no. 3, p. 155–179, doi: 10.1016/S0020-0255(00)00051-7.

[19] M. Ford, *Rise of the Robots: Technology and the Threat of a Jobless Future*, New York 2016, p. 175–192.

the quality of life of a person will become more socially acceptable than interventions that change the human genotype. In the cultural-humanist narrative, cyborgization is understood as a threat, and to a lesser extent, as an opportunity for man.

In the case of these three narratives we are faced with different reading of the human-machine relationship, and assessment of the impact of modern technologies on human life. It seems that the engineering--pragmatic and biological-evolutionary narratives complement each other in some theorists' approaches. For the time being, the cultural--humanist narrative remains in opposition to these first two narratives. The main question is whether they can complement each other in our description of the world, or whether they will remain in constant conflict. The author of the article will develop this thought based on the analysis of the nature of technology by Martin Heidegger and the formula of natural-born cyborg by Andy Clark.

The essence of cyborgization

In the mid-twentieth century, Martin Heidegger pointed to two key aspects of the essence of technology: 1) a means to an end, and 2) a human act. Both of these terms are interdependent, because it is man who introduces harmony to the arrangement of objects, which makes us perceive them in the perspective of "meaningful" use; technical tools that offer certain possibilities, some of which come into existence. Technical items are man-made as an instrument for action. However, the question asked by Heidegger about the essence of technology is about analysing things in isolation from their use, in which things are treated as the causative cause for what does not yet exist (ger. *nervorbringen*).[20] The German philosopher combined technique with discovering and extracting from things something whose potential has not been revealed yet.

[20] Heidegger refers here to the concept of the four causes of Aristotle: material, formal, sparse and intentional, see M. Heidegger, *Budować, mieszkać, myśleć: eseje wybrane*, tłum. K. Michalski, K. Wolicki, Warszawa 1977, p. 227.

Aspects of extraction in which man participates are sharing, transforming, storing and separating. Participation in this process makes the machine user develop technical skills. In this way, technical tools become an essential part of human life. For Heidegger, technology is a system of related relationships. Technology integrated into the human image of the world introduces a kind of thinking in which the real becomes a system of parts (fragments) that can be configured – assembled and dismantled. The use of technical tools changes a man, reveals something to him, a certain dimension that had been in him before, but it could only manifest itself at the moment when humanity reached certain development of technology.

Ultimately, technical thinking, currently pragmatic, influences how we understand institutional life, economic exchange, marketing strategies and the sense of interpersonal relationships. In the context of the problem of cyborgization, discovery does not only concern the potential of things, but also its own potential as a being with a technical way of thinking about the world and understanding the horizon of meaning for one's own activity. Heidegger did not write about cyborgization, but his conceptual analyses are suitable for determining the issue of cyborgization.

What Heidegger understands as a threat and a reason to forget about what is most important to man, that is, authenticity of being in the world, for Clark it is the inevitable stage of human development. According to Clark, the technology does not destroy our existence, but allows it to develop properly. The Scottish philosopher, like Martin Heidegger before, poses the philosophical question about the essence of man in the age of new technologies. This is not about post-human invasive practices postulated by post-humanists, but such skills that develop our natural predispositions, in fact breaking the typical opposition into the natural and the artificial, treating artificiality as extension of naturalness. At work *Natural-Born Cyborgs* Clark wrote:

> The cyborg is a potent cultural icon of the late twentieth century. It conjures images of human-machine hybrids and the physical merging of flesh and electronic

> circuitry. My goal is to hijack that image and to reshape it, revealing it as a disguised vision of (oddly) our own biological nature. For what is special about human brains, and what best explains the distinctive features of human intelligence, is precisely their ability to enter into deep and complex relationships with nonbiological constructs, props, and aids. This ability, however, does not depend on physical wire-and--implant mergers, so much as on our openness to information-processing mergers.[21]

There are aspects of cyborgization that constitute the secret dimension of human being in the world and result from the concept of a man living surrounded by technical artefacts. Philosophical analysis in the context of the problem of cyborgization is to examine the implicit way of thinking about technology, which constitutes the background for human expectations and fears associated with the use of technical tools. Moreover, it is about complementing the issue of cyborgization with issues related to the effects of equipping people with new ("artificial") capabilities. In general terms, human cyborgization means the emergence (element of directed evolution) of a hybrid consisting of a biological body, mind and mechanical element.[22] The human extension program means the possibility of increasing his ability to acquire knowledge and remember information. In the concept of the expanded mind, the machine-computer and its various variants were part of the human environment, much more important than Otto's notebook, from Clark and Chalmers' example. In the case of a human cyborg, the machine becomes part of its essence, something that extends human biological existence, equips us with additional skills, and allows us to digitize consciousness on carriers that can store digital records of human consciousness, giving us a cyber-technical vision of immortality. In Andy Clark's view, cyborgization is built on human predispositions and expectations. The author of *Natural-Born Cyborgs* wrote:

[21] A. Clark, *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence*, Oxford–New York 2003, p. 5.

[22] A. Sandberg, N. Bostrom, *Converging cognitive enhancements*, "Annals of the New York Academy of Sciences" 1093 (2006) no. 1, p. 201–227, doi: 10.1196/annals.1382.015.

> Our immediate task, however, is to get a more concrete sense of some of the complex ways in which technologies simultaneously shape and adapt to the cognitive profiles of biological users. With that in mind, let's look briefly at a familiar item, one that long-ago passed from the realm of opaque technology into that of transparent symbiotic partner— the humble wristwatch.[23]

Biological perception of human senses and mind extended by added technical possibilities. Modifying the human body using modern technologies affects our understanding of ourselves and social relationships. The contemporary user of modern technologies will manage the IT system as a filter through which it will perceive social behaviour. The proximity in the recognition of man and machine goes both ways. A machine equipped with artificial intelligence will learn our natural reactions. According to Clark, non-invasive cyborgization should be understood as all technological tools that affect our cognitive skills, and we will not notice the presence of these tools in our body. This applies especially to the use of bioelectronics implants to maintain or improve the functioning of a man who has lost his natural cognitive powers. This improvement can be medically justified when the artificial body restores or supplements the efficiency of the natural organ. For example, cochlear implants electronically stimulate the auditory nerve. Such devices enable deaf people to hear. Their use is limited by the requirement of a healthy auditory nerve. The advanced research is currently under way to create an implant that bypasses the auditory nerve and connects directly to the brainstem. Similarly, "artificial" prostheses allow blind people to regain their eyesight in a way that does not deprive them of comfort in life. The prostheses being connected to the peripheral nervous system (Argus II retinal prosthesis) allow vision. This is done in such a way that the antenna and the electrode array are surgically implanted into the eye and with the help of the optical nerve the cells send information to the brain which receives a picture of reality.

[23] A. Clark, *Natural-Born Cyborgs*…, op. cit., p. 39.

As a result, the boundary between the intelligent system and the human brain is blurred.[24]

In other cases the "artificial" organ will provide the human body with new possibilities. For example, when the artificial ear cochlea allows recognition of voices over a long distance, or allows precise recognition of the timbre of voice of interlocutors. This skill is useful in conducting business conversations when the interlocutors want to hide their intentions. "Artificial" language allows you to test flavours (useful for the creators of new dishes and drinks), "artificial" nose, sensing ecological pollution, allows you to sense the presence of gases, until then odourless to a man. Expanding sensory perception means seeing more, hearing better, feeling more clearly. The postulate is related, among others, to tactile computer science. The sense of sight in this case is supplemented with a sense of touch. "The effective use of tools is inherent in a continuous process of operation, separation and re-operation and the use of technical tools.[25]

Mainly for military use: 1) special helmets were created to allow vision in the dark; 2) issuing mental orders, without voice, electroencephalographic waves are used for this purpose; 3) a bionic backpack has been constructed that reduces fatigue; 4) a supportive exoskeleton was created, thanks to which man can perform hard work exceeding his biological capabilities; 5) it is also possible to transfer touch at a distance, it is especially useful when people sent into space suffer from tactile deprivation. Over time, these devices become something commonly used.

Undoubtedly, machines affect human life and vice versa, our expectations affect the functioning of machines. The technical product is subjected to cultural and evolutionary pressure to affect its use by a better adaptation to the physical and cognitive abilities of the human mind. Techno-evolutionary categories are about creating technical objects that will enter into a symbiotic relationship with their users. In this way,

[24] A. Clark, *Natural-Born Cyborgs*…, op. cit., p. 16.

[25] P. Dourish, *Where the Action Is: The Foundations of Embodied Interaction*, Cambridge–London 2001, p. 42.

the human body is subject to mechanical virtualization, in which the boundaries between physical and digital space are blurred. Clark predicts that the evolutionary change will consist of a smooth biotechnological transition from the physical to virtual sphere.[26]

The question may be asked, at what economic and social cost it will be achieved. The Scottish philosopher notes that the process of adapting to biotechnological changes is slow and requires social acceptance. Human brains and bodies connect with technical tools, thus increasing and modifying areas of extended thinking and extended feeling. New designers and new ideas emerge in this process and they are constantly expanding the human thinking environment. The expansion of the mind boundaries through the relationship with the environment began when the language, culture and their consequences, i.e. technology came into being. The process is being continued and is constantly accelerating. According to Clark, human thought is biologically and technologically prepared to become a cyborg.

> The word cyborg once conjured visions of wires and implants, but as we have seen, the use of such penetrative technologies is inessential. To focus on them is to concede far too much to the ancient biological skin-bag. What matters most is our obsessive, endless weaving of biotechnological webs: the constant two-way traffic between biological wetware and tools, media, props, and technologies. The very best of these resources are not so much used as incorporated into the user himself/herself. They fall into place as aspects of the thinking process. They have the power to transform our sense of self, location, embodiment, and of our own mental capacities. They impact who, what and where we are. In embracing our hybrid natures, we give up the idea of the mind and the self as a kind of wafer-thin inner essence, dramatically distinct from all its physical trappings. In place of this elusive essence, the human person emerges as a shifting matrix of biological and nonbiological parts.[27]

[26] A. Clark, *Natural-Born Cyborgs*…, op. cit., p. 53.
[27] A. Clark, *Natural-Born Cyborgs*…, op. cit., p. 198.

In one of his last books, *Surfing Uncertainty: Predication, Action, and Embodied Mind*, Clark develops the concept of an expanded mind in relation to the description of the relationship between the mind and sensory simulation, among others to predict the decision that a human makes when choosing specific information (e.g. surfing the net). Being embodied entities, we select the information predicted by our brains. Then also our bodies perform a specific movement. Studying the connection between mind, sensory stimulus and body movement is particularly interesting for Clark. It's about describing the rules of probabilistic prediction and the associated consequences of our actions. Some decisions resulting from the association of the brain with a sensory stimulus are simple choices, but others relate to the creation of complex social projects that shape our image of the world. In this book the Scottish philosopher uses mechanical terms to describe the principles of the functioning of the mind combined with senses and movement. Understanding and describing the mechanism of this relationship can equip the robot with skills and behavioural characteristics close to human behaviour, which would ultimately affect the acceptance of the presence of robots in the human space of life and action.[28]

Conclusion

From the point of view of the question about the essence of cyborgization, the following problem should be taken into consideration: are people (state institutions, corporations, research centres) able to control this process? Assuming the nineteenth-century understanding of evolution that as a process independent of man, it is done through us rather than thanks to us. The biological and cultural theories of evolution formulated at that time assumed that the individual had no influence on the course of the adaptation process to the environment. The evolutionary adaptation concerned the species. The assumption regarding

[28] A. Clark, *Surfing Uncertainty: Prediction, Action, and the Embodied Mind*, Oxford 2016, p. 53–83.

man understood as an object of evolution has changed in the modern technoevolution. Currently, scientific and technical centres with appropriate funding sources want to gain control of environmental change and biological changes that affect man (self-directed human evolution). Evolutionary humanism implies going beyond biological determinism and technical control of evolutionary selection. This means that man wants to influence the course of the process of biological changes, which until now he was only passively affected by.[29]

Modern technology does not lead to individualisation of the subject, but it unifies us, makes loss of our personal independence real. In the engineering-pragmatic and biological-evolutionary narratives, individual freedom of man is not taken seriously. It seems that the cyborg man will live comfortably and for a long time, will possess vast knowledge, but for the price of safety and convenience of action he will give up the freedom of action and entrust his fate to institutional algorithms. The process of bringing man closer to technology goes both ways, we introduce tools within the boundaries of our body, and on the other hand, social life makes us similar to the technical functioning of machines. If Clark is right, this process is inevitable. The perfection of machines will be based on the moral perfectionism of correctly defined procedures, and not on the spontaneity of the cyborg-man's behaviour guided by moral intuition. In Clark's concept, an engineering-pragmatic narrative can be combined with the biological-evolutionary narrative, but not with the humanistic-cultural one. The process of bringing man closer to technology goes both ways, we introduce tools within our body, and on the other hand, social life makes us similar to the technical functioning of machines. In his work Clark does not look into the probable threats and cultural anxieties associated with the evolution of man-cyborg; he would rather leave us with those threats. Clark's concept poses a certain difficulty in justifying individual moral responsibility for technological development. It doesn't, of course, mean that possibilities

[29] F. Fukuyama, *Transhumanism*, "Foreign Policy" 2004 no. 144, p. 42–43, doi: 10.2307/4152980; M. Klichowski, *Narodziny cyborgizacji*…, op. cit., p. 109–111.

of combining the narratives should be eliminated. Further technological development must gain social acceptance so that the entanglement of man and technology will be most beneficial, yet it will not affect the core of humanity and will not transform us into the servants and puppets of the political-information system.

From the perspective of a humanist-cultural narrative, cyborgization can pose a threat to man, violate the integrity of the will and human mind. Man wanting to maintain the quality of his life will equip his body with technical elements. However, we want to preserve the right to personal integrity (identity of the person), the right to free decision about ourselves and privacy and security protection from the power of information systems (the power of algorithms). Access to information means not only a benefit for digital machines (computer, smartphone, iphone) users, but also control over our minds from information senders (browser owners, social networks administrators, gatekeepers). Responsibility for technology is also responsibility for the future and well-being of future generations. Consent to the unconditional connection of man and machine can mean losing the ability to decide about yourself, "escape from freedom" to artificial life in the digital world. Cautious and critical attitude should be taken towards human and machine joining programs.

Bibliography

Butler S., *Darwin among the Machines. (To the Editor of The Press)*, "The Press (Christchurch, New Zealand)" 1863, p. 179–185.

Cave S., Nyrup R., Vold K., Weller A., *Motivations and Risks of Machine Ethics*, "Proceedings of the IEEE" 107 (2019) no. 3, p. 562–574, doi: 10.1109/JPROC.2018.2865996.

Clark A., *Intrinsic content, active memory and the extended mind*, "Analysis" 65 (2005) no. 1, p. 1–11, doi: 10.1093/analys/65.1.1.

Clark A., *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence*, Oxford–New York 2003.

Clark A., *Supersizing the Mind: Embodiment, Action, and Cognitive Extension*, Oxford 2008.

Clark A., *Surfing Uncertainty: Prediction, Action, and the Embodied Mind*, Oxford 2016.

Clark A., Chalmers D., *The extended mind*, "Analysis" 58 (1998) no. 1, p. 7–19.
Dourish P., *Where the Action Is: The Foundations of Embodied Interaction*, Cambridge–London 2001.
Dreyfus H. L., *Being-in-the-World: A Commentary on Heidegger's Being and Time*, Cambridge, MA 1991.
Ford M., *Rise of the Robots: Technology and the Threat of a Jobless Future*, New York 2016.
Fukuyama F., *Transhumanism*, "Foreign Policy" 2004 no. 144, p. 42–43, doi: 10.2307/4152980.
Garreau J., *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies – and What It Means to Be Human*, New York–London et al. 2005.
Gehlen A., *Anthropologische und sozialpsychologische Untersuchungen*, Hamburg 1986.
Gehlen A., *W kręgu antropologii i psychologii społecznej: studia*, tłum. K. Krzemień-Ojak, Warszawa 2001.
Giere R., *The problem of agency in scientific distributed cognitive systems*, "Journal of Cognition and Culture" 4 (2004) no. 3–4, p. 759–774, doi: 10.1163/1568537042484887.
Heidegger M., *Budować, mieszkać, myśleć: eseje wybrane*, tłum. K. Michalski, K. Wolicki, Warszawa 1977.
Jonas H., *Das Prinzip Verantwortung: Versuch einer Ethik für die technologische Zivilisation*, Frankfurt a.M 1979.
Klichowski M., *Narodziny cyborgizacji: nowa eugenika, transhumanizm i zmierzch edukacji*, Poznań 2014.
Latour B., *Visualization and cognition: thinking with eyes and hands*, "Knowledge and Society, Studies in the Sociology of Culture Past and Present" 6 (1986), p. 1–40.
Menary R., *Neural plasticity, neuronal recycling and niche construction*, "Mind & Language" 29 (2014) no. 3, p. 286–303, doi: 10.1111/mila.12051.
More M., *Transhumanism: Towards a Futurist Philosophy*, "Extropy" (1990) no. 6, p. 6–12.
Muszyński Z., *Umysł rozszerzony, poznanie rozszerzone, „nauka rozszerzona"*, "Filozofia i Nauka. Studia filozoficzne i interdyscyplinarne" 3 (2015), p. 265–280.
Sandberg A., Bostrom N., *Converging cognitive enhancements.*, "Annals of the New York Academy of Sciences" 1093 (2006) no. 1, p. 201–227, doi: 10.1196/annals.1382.015.
Searle J. R., *The Construction of Social Reality*, New York 1995.
Sorgner S. L., *Beyond Humanism: Reflections on Trans- and Posthumanism*, "Journal of Evolution and Technology" 21 (2010) no. 2, p. 149–172.
Stephens G., *Beyond Transhumanism*, "Futurist" 46 (2012) no. 5, p. 32–44.

Sutton J., *Exograms and Interdisciplinarity: History, the Extentented Mind, and the Civilizing Process*, in: *The Extended Mind*, ed. R. Menary, Cambridge–London 2010.

Taylor C., *Modern Social Imaginaries*, Durham–London 2004.

Tegmark M., *Why the brain is probably not a quantum computer*, "Information Sciences" 128 (2000) no. 3, p. 155–179, doi: 10.1016/S0020-0255(00)00051-7.

Tennison M. N., *Moral transhumanism: The next step*, "Journal of Medicine and Philosophy" 37 (2012) no. 4, p. 405–416, doi: 10.1093/jmp/jhs024.

Virtual: Origin and meaning of virtual, https://www.etymonline.com/word/virtual (29.11.2019).

Wojewoda M., *Jakość życia jako problem filozoficzny*, "Folia Philosophica" 40 (2018), p. 97–115.

Abstrakt

Narracje na temat cyborgizacji w kontekście technoewolucji

Artykuł poświęcony jest narracjom kulturowym na temat cyborgizacji, w których zostaje opisana relacja między człowiekiem i cybermaszyną. W tym nowym ujęciu maszyna staje się częścią ludzkiego ciała, pozwala człowiekowi na poprawę jakości życia, ale może także uzupełnić ludzkie naturalne zdolności, wyposażając go w nowe („sztuczne") kompetencje. Autor artykułu poddaje analizie problem trzech kulturowych narracji kulturowych dotyczących cyborgizacji człowieka. Te trzy modele narracji to narracja inżyniersko-pragmatyczna, biologiczno-ewolucyjna i kulturowo-humanistyczna. Stanowią one współczesne imaginaria społeczne na temat technoewolucji i związku człowieka z cybermaszyną. Autor artykułu na przykładzie koncepcji naturalnego cyborga Andy'ego Clarka sprawdza tezę, czy jest możliwe porozumienie między tymi narracjami. Kwestia społecznej akceptacji dla cyborgizacji jest szczególnie ważna z punktu widzenia postępu technologicznego oraz pytania o istotę człowieka i techniki w odniesieniu do nowych możliwości, jakie daje współczesna biotechnologia i robotyka w kontekście poprawy jakości naszego życia.

Słowa kluczowe

cyborgizacja, technoewolucja, imaginarium społeczne, narracja kulturowa, Martin Heidegger, Andy Clark

Abstract

Narratives about Cyborgization in the Context of Technoevolution

The article is devoted to cultural narratives about cyborgization, in which the relationship between man and cyber machine is described. In this new approach, the machine becomes part of the human body, allows man to improve the quality of life, but also can complement human natural abilities with new ("artificial") competences. The author of the article analyses the problem of three cultural narratives regarding human cyborgization. These three narrative models are engineering-pragmatic, biological-evolutionary and cultural-humanistic. They constitute the contemporary social imaginarium on the subject of technoevolution and the relationship between man and cyber machine. The author of the article, on the example of Andy Clark's concept of the natural cyborg, verifies the thesis whether agreement is possible between these narratives. The issue of social acceptance for cyborgization is particularly important in the context of technological progress and questions about the essence of man and technology in the light of new opportunities offered by modern biotechnology and robotics with the view of improving the quality of human life.

Keywords

cyborgization, technoevolution, social imaginarium, cultural narratives, Martin Heidegger, Andy Clark